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Long-Range Budgeting of Public Capital Expenditures

By KARL T. COMPTON

I HAVE heard it said that the degree of civilization of a people is measured by the extent to which it foregoes its present desires for the sake of its future satisfactions. I think this is equally true of individuals and of social groups; and, measured by this standard, I think it is fair to say that the social group, such as the municipality or the state or the Federal Government, at the present time falls very far short of the ideal which an economist or an engineer would like to set up.

LONG-RANGE PLANNING ESSENTIAL TO CIVILIZATION

Now, I think an equivalent definition of civilization is this, that civilization of a people is measured by the extent to which it is able to plan its course and to steer according to that plan. So, in discussing long-range planning, I think that we are discussing one of the most basic things on which our civilization rests, and one of the things that really must be developed if our social structure is to progress.

I realize perfectly that it is unnecessary to advocate or to argue for long-range planning. The great need is to educate and lead the voting public to demand that something of this sort be done, and to induce legislative bodies to see that it is done. Perhaps the present economic depression is doing us a very great service by forcing us to give more serious attention to this subject. In any case, it is very encouraging to note the various movements in the direction of long-range planning which have recently come into being.

Since long-range budgeting is an essential aspect of long-range planning, I will discuss these two subjects together.

My remarks are briefly grouped around three subjects. The first of these has to do with the need of planning, in two of its aspects. The first is that in order to have effectual and economical attainment of valuable results, it is necessary to be able to weigh relative values and to balance the future gains against the costs; and this can be done only if the work which is in prospect is viewed in the perspective, or against the background of some sort of a long-range plan which states the ideal toward which we wish to move. Without this sort of planning, society is more like an animal than like a man, to use an analogy. It is impulsive, it is likely to be selfish and greedy, and to move without very much goal or purpose. It may perhaps be lovable, but it is relatively ineffectual.

The second point in the need for planning is that it is only through planning that public works construction can be used really effectively as a means for stabilizing employment.

Dr. Loucks described very well the objective that we have in view in using public works as a stabilizing influence.¹ As he stated it, the public works activity should be in some sort of inverse ratio to the general business activity. In other words, it is desirable to draw in employment for work on public construction at a time when this labor is not being bid for in private industry.

¹ See "Public Works Planning and Economic Control," in this volume.

Without this, we inevitably have some very bad features. We inevitably have the waste that occurs when things are done and have to be done over again, when they are done pointlessly, when they are done without adequate planning. Then sometimes it is impossible to proceed, even though we wish to proceed, because of the lack of plans and the time which is necessary in order to get detailed specifications drawn up, and go through the legal procedures that are necessary to acquire sites, and things of that sort.

As an example which is not unique during the present depression, one of the states impulsively, and with admirable motives, voted a large appropriation for public works construction. But the fiscal year is coming to an end with less than one fourth of that appropriation having been used—not because there was no desire to use it, not because there was not a great demand for employment, and not because there was not a great deal of work to be done; but simply because the plans could not be prepared rapidly enough and the sites could not be acquired in time.

For example, sites can ordinarily be acquired more rapidly for road construction than for buildings. It takes an average of about three years of work and planning, with a definite objective, to overcome the legal obstacles or hurdles that can be thrown in the way of acquiring desired building sites.

THE TIME FACTOR IN STABILIZATION

The second point is the importance of the *time factor* in bringing anything of this sort to bear as a stabilizing influence. Speaking as a physicist, I can use a physical analogy. When any physical system begins to get out of equilibrium or out of balance, the more quickly the remedy is applied,

the less strenuous this remedy has to be. I can use an example which is probably familiar to us all. We have probably watched groups of children trying to balance a broom on the nose. We may have tried it ourselves, and found that the reaction time is a very important feature. If the broom falls over a little too far, we may have to run clear across the room in an attempt to get the broom again in an upright position, and will probably fail. So, similarly, I think that what we might call "economic reaction time" is an important factor in arresting these downward trends before they have acquired the volume and the momentum of an avalanche—before they have had the effect on the psychology of the investing and industrial public which really brings about a big depression. Thus, any plan of stabilization should be capable of being put into effect within a reasonably short time after the need for this stabilization arises.

So, to be effective, there are three things that are necessary. In the first place, there have to be plans in which the actual specifications are worked out for at least a year or two in advance. In the second place, there must be legal authorization, so that whenever the emergency arises, plans can be set into action without waiting for, or perhaps bickering in political discussions over, that feature. In the third place, there must be some method which has been arranged in advance for adequate financing of such additional public works construction as is desirable in a time of depression.

PROPOSED MASSACHUSETTS LEGISLATION

I should like to speak very briefly, as my third point, on some aspects of a study which has been made by the Massachusetts Commission on Stabilization of Employment, which has

resulted in the introduction of several bills before the legislature, one of which has to do with advance planning of public works. That bill provides for a planning board. It is necessary, of course, to have some one responsible for carrying the thing out. It is advisable to have as little machinery as possible. So this board would be set up so as to utilize the services of several officials who, in the course of their other regular duties, have occasion to be in touch with many of the factors that are needed. The particular board that is suggested consists of five. A chairman and another man who is familiar with the construction industry would be appointed especially for the board, and the other three would be existing State officials—the Chairman of the Commission on Administration and Finance, the Commissioner of Labor and Industry, and the Director of Accounts. We estimate that the total cost to the state of operating this planning board, including salaries and all operating expenses, would be in the neighborhood of \$30,000 a year.

The duties of this planning board would be: (1) to keep track of the trends of employment, so that it could report to the legislature or the Governor at any time as to whether or not an unemployment emergency was in existence or was probably approaching; (2) to collect from all those agencies over which the state has control, construction plans for five years in advance, with at least approximate estimates as to the necessary budget; (3) to see that the plans for at least one year in advance of the current year's construction were prepared in sufficient detail as to specifications so that the work could be promptly put into operation; (4) to recommend to the legislature a five-year public works construction program with an estimated budget, also the particular

construction out of that program for the ensuing year (which would be one fifth of the total five-year amount) together with detailed plans and specifications for one year in advance of the present construction.

LEGISLATIVE ACTIONS PROPOSED

The legislative actions which are required under this plan are the following: The legislature would adopt a five-year program, subject, of course, to revision and readoption each year so as to be flexible. The five-year plan adopted would presumably be that recommended by the planning board, or such a plan as amended to suit the best judgment of the legislature. Then the legislature would be called upon to make an appropriation of one fifth of the estimated cost of the five-year project. That would be enough to take the construction program ahead for the ensuing year. And finally, what is perhaps the most unique feature of this bill is the authorization by the legislature of the issuance of short-term notes or bonds up to a maximum of one half of one year's appropriation, to be issued only if an unemployment emergency were declared to exist by the Governor, upon advice of the planning board.

The advantages of this last provision are that, if an unemployment emergency occurs, it is not necessary to wait for a sitting of the legislature or for the passage of a bill. The authorization is limited to the cost of a half year's construction program. But that, together with the existence of the planned specifications, would enable the work to be gotten under way rapidly.

These short-term notes or bonds are designed to mature within five years and to be callable any time after two years, and they are to be retired by charging them to a portion of the ordinary annual appropriation for the

ensuing five-year period. Thus, the net result of this arrangement would be that the total cost of the work for any five-year plan of public works would be the same as if the emergency had not existed. During the emergency, some of it would be speeded up and paid for by these short-term notes which would be retired by appropriating to retire them, a certain proportion of the appropriation for the ensuing years. And during the ensuing years, the public works construction would be somewhat less than it would have been otherwise, but the ultimate amount of work done over the five-year period would be the same as if the emergency had not occurred. The annual appropriations would be the same as if the emergency had not occurred; there would be no additional taxes, and no financing of public works which would require the withdrawal of funds, such as by taxation, which would otherwise be effective in other channels in relieving unemployment. Finally, the public and private labor demands would be properly adjusted for stabilization, in that construction labor flows to public works during times of economic depression, and flows in the direction of private construction during good times.

THE FATE OF THE BILL

This, in brief, is the substance of this bill, which has the support of all of the leading groups of organized labor in the State of Massachusetts, of the organized groups of engineers, architects, industrial groups, and economists, and, so far as I am aware, it has no opposition. The legislature, however, is playing safe this year, apparently doing nothing which is unnecessary, and has referred this bill to its next session. It is urgently to be hoped that this proposed legislation, so obviously helpful and safeguarded, will

not be postponed until our people are again lulled by a false sense of temporary security.

RELATIVE IMPORTANCE OF PUBLIC CONSTRUCTION

Now I wish to speak very briefly about some specific questions and considerations regarding the effectiveness of public works as a stabilizing factor for unemployment. The first of these is that public works form a relatively small part of total construction. In absolute magnitude, public works are a very large factor and can be of enormous influence as a stabilizing factor. Relative, however, to the total amount of construction, they are not particularly large. I have at hand only the data for the State of Massachusetts, but in that State the construction *by* the State is about 6 per cent of the total construction *in* the State; i.e., public works form about 6 per cent of the construction that goes on in the State. The employees who are employed upon public works, by the State and agencies under the control of the State, comprise about 1 per cent of all the employees engaged in construction in the State.

Now, of course, the amount of construction which is carried on by the cities and the towns is in the aggregate considerably larger than that carried on by the states, and that of the states, in turn, is considerably larger, I believe, than that of the Federal Government. In Massachusetts, for example, the twenty-six largest cities spend in annual construction for public works, more than twice as much as is spent by the State in public works.

As to distribution, a little more than half the public work in that State goes into highways; the rest of it goes into buildings, parks, sewers, and waterways, in approximately that order of

importance. In some of the other states, the ratios would be somewhat different. In some of the newer states, for example, where highway construction has not been carried on for so many years, construction and highways probably are a relatively larger factor.

DISTRIBUTION OF PUBLIC WORKS APPROPRIATIONS

Another question which is very frequently asked in regard to public works as a factor in stabilizing employment is, How much of the appropriation for public works actually goes into the pockets of the employees? How much, in other words, goes to labor? A survey of roads, bridges, and buildings indicates, with surprising similarity in all of those fields, that about 75 per cent of all of the money that goes into public works goes into wages—labor. Of that 75 per cent, about 35 per cent goes to wages of laborers that are on the actual construction job. About 30 per cent goes to laborers who are engaged in the production of the materials that are used in the construction job, such as cement, sand, and steel, including also transportation. About 10 per cent goes to the laborers who produce the machinery which is used in the construction or in production of materials. Thus, altogether, something like a total of 75 per cent of the appropriation goes immediately into wages.

There is another question that is very frequently asked: How effective is this amount of money, put into wages, in creating employment? There we have to consider the turnover of the wage money. There is, of course, a certain multiplication factor, because when Concrete Mixer Smith gets his wages, those wages are expended by him probably within a few weeks, and they go perhaps to the retailer, and are

then distributed among the various wholesalers, in transportation, and among the producers. The money goes through the pockets of each of these and again goes through the same sort of a cycle. I do not know whether the multiplication factor has ever been worked out, but it is certain that, taken over a period of a year, there would be a very considerable multiplication factor that would have to be considered.

CONSTRUCTION NOT CHEAPER DURING DEPRESSION

Now, there is another point in connection with these detailed studies that is perhaps of interest. It is often argued that public works should be conducted during times of depression because then the construction is cheaper and the public will get a larger amount of construction for its money. Our Commission has just made an investigation of this point and finds that this argument appears to be fallacious. At least, if the public works construction is put into effect as promptly as we think it ought to be to act as a stabilizing influence and as a check upon a tendency toward economic upset, the wages and the cost of materials have not fallen enough to make that argument valid. In fact, a survey of the costs of construction of public works in the various periods of depression over the last few decades indicates that in some of these periods the costs were a little higher than they would have been just before the depression. In others, they were a little lower; and the average was about the same. So this argument for carrying on public works in a time of economic depression from the standpoint of getting more for the money is not sound. But I think all the other arguments that have been proposed are valid, and that public

works construction can present a clear case as a stabilizing influence for employment.

There is just one more question to be answered. How important are public works in stabilization? I have quoted some figures to indicate that in some ways they are not very important, at least as measured in terms of total expenditure for construction or in terms of the total amount of employment in any given region.

However, I think that we probably will be unsuccessful if we try to find in any *one* means a universal panacea which will prevent these business cycles and periods of depression. But we can intelligently decide on a *group* of actions, of which public works is one example, each of which can clearly be demonstrated to have the right kind of stabilizing influence, with the expectation that the combined influence may be really powerful in stabilization.

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